

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CF018240WO	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/JP2004/009285	International filing date (day/month/year) 24/06/2004	(Earliest) Priority Date (day/month/year) 09/07/2003
Applicant CANON KABUSHIKI KAISHA		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

ECB-TYPE COLOUR LIQUID CRYSTAL DISPLAY WITH RESTRAINED TEMPERATURE
DEPENDENCY OF COLOUR TONE

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the drawings,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1, 7

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☒ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

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Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

The present invention provides a liquid crystal display device (70) including a polarizing plate (87a, 87b), a pair of substrates (81a, 81b) at least one of which is transparent, a pair of electrodes (82a, 82b), and a nematic liquid crystal (85). The nematic liquid crystal is filled between the substrates, is aligned to be substantially perpendicular to the substrates when applying a voltage not higher than a threshold value between the electrodes, has negative dielectric constant anisotropy, and undergoes a change in tilt angle of alignment with respect to the substrates in accordance with applied voltage when applying a voltage not lower than a threshold value between the electrodes. The liquid crystal display device has a voltage range in which the rate of change in retardation level with respect to temperature is substantially zero, and displays red or purple when voltage is applied at the maximum voltage value in the voltage range. According to the present invention, changes in color tone depending on temperature are restrained.

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International Application No

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02F1/139

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC, COMPENDEX, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CLERC F: "ELECTRO-OPTICAL LIMITS OF THE ELECTRICALLY CONTROLLED BIREFRINGENCEEFFECT IN NEMATIC LIQUID CRYSTALS" DISPLAYS, ELSEVIER SCIENCE PUBLISHERS BV., BARKING, GB, vol. 2, no. 7, 1 October 1981 (1981-10-01), pages 341-347, XP002041596 ISSN: 0141-9382 figures 1a,1b,4,5 the whole document	1-6
X	US 5 680 184 A (NISHINO TOSHIHARU) 21 October 1997 (1997-10-21) column 35, line 27 - line 43; figures 19,23 Eighth embodiment	1-6
	----- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

30 September 2004

Date of mailing of the international search report

18/10/2004

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Wolfrum, G

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 570 211 A (CHIDA HIDEO ET AL) 29 October 1996 (1996-10-29) column 3; figure 3 -& PATENT ABSTRACTS OF JAPAN vol. 0165, no. 14 (P-1442), 22 October 1992 (1992-10-22) -& JP 4 188113 A (FUJITSU LTD), 6 July 1992 (1992-07-06) abstract -----	1-6
X	US 5 796 378 A (KIKUCHI ZENTA ET AL) 18 August 1998 (1998-08-18) abstract; figures 13A, 24 column 24, line 42 - line 57 -----	1-6

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Information on patent family members

International Application No

PCT/JP2004/009285

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5680184	A	21-10-1997	JP 7005457 A	10-01-1995
			JP 7318969 A	08-12-1995
			JP 7333601 A	22-12-1995
			JP 8015696 A	19-01-1996
			CN 1116316 A	07-02-1996
			KR 158072 B1	15-12-1998
			TW 464776 B	21-11-2001
			JP 2713184 B2	16-02-1998
			JP 8015691 A	19-01-1996
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JP 4188113	A	06-07-1992	NONE	
US 5796378	A	18-08-1998	JP 7270776 A	20-10-1995
			JP 3486783 B2	13-01-2004
			JP 7334127 A	22-12-1995
			JP 7334128 A	22-12-1995